

Appl.No.: 09/732,337
Amendment dated April 5, 2004
Response to Office Action mailed January 5, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original) A wide band signal coder comprising:

means for subdividing signals over a bandwidth into a lower subband and a higher subband signals,

a downsampler for downsampling said lower subband signals,

a low band speech coder coupled to said downsampler for encoding said downsampled lower subband signals, and

a highband coder for coding said higher subband signal without downsampling, and

a combiner for combining said higher and lower subband signals.

Claim 2 (original) The coder of Claim 1, wherein said combiner includes a bandpass filter coupled to said highband coder to bandpass said higher subband signal to complement the lower subband.

Claim 3 (original) The coder of Claim 1, wherein said combiner includes upsampling said encoded lower subband signals.

Claim 4 (original) The coder of Claim 1, wherein said low band speech coder is a CELP coder.

Claim 5 (original) The coder of Claim 1, wherein said highband coder is an LPC coder.

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Claim 6 (original) The coder of Claim 1, wherein said highband coder is random noise.

Claim 7 (original) The coder of Claim 1, wherein said highband coder is noise excited LPC.

Claim 8 (original) The coder of Claim 1, wherein said highband coder is gain-matched analysis by synthesis.

b' Claim 9 (original) The coder of Claim 1, wherein said highband coder is multi-pulse coding.

Claim 10 (amended) A speech coding system comprising:

means for subdividing signals over a bandwidth into a lower subband and a higher subband signals,

a downsampler for downsampling said lower subband signals,

a low band speech coder coupled to said downsampler for encoding said downsampled lower subband signals,

a highband coder for coding said higher subband signal without downsampling;

a bandpass filter coupled to said highband coder to bandpass said higher subband signal to complement the lower subband;

a first decoder for decoding said encoded lower subband signals;

means for upsampling and lowpass filtering said lower subband signals to the same rate as the higher subband signals;

a second decoder for decoding said higher subband signals and bandpass filtering said higher subband signals; and

~~and~~ an adder for summing said lower subband signals and said higher subband signals.

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Claim 11 (original) The system of Claim 10, wherein said low band coder is a CELP coder.

Claim 12 (original) The system of Claim 10, wherein said highband coder is random noise and said highband decoder includes a gain-scaled random noise generator.

Claim 13 (original) The system of Claim 10, wherein said highband coder is noise excited LPC coder and said decoder includes a gain-scaled random noise generator and the output is applied to an LPC synthesis filter.

Claim 14 (original) The system of Claim 10, wherein said highband coder includes a gain-matched by synthesis coder and the highband decoder includes a codebook with allowable excitation vectors, a multiplier and an LPC filter.

Claim 15 (original) The system of Claim 10, wherein said coder is a multi-pulse coder and the decoder includes gain-scaling an approximation waveform that is gain-scaled and filtered by an LPC synthesis filter.

Claim 16 (original) A wideband speech decoder system comprising:
a first decoder for decoding encoded lower subband signals;
a second highband decoder for decoding higher subband signals at a higher sampling rate than said lower subband signals;
a converter for converting said lower subband signals to the same sampling rate as the higher band signals; and
an adder for summing said lower subband signals and said higher subband signals.

Claim 17 (original) The decoder system of Claim 16, wherein said second decoder includes a gain-scaled random noise generator.

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Claim 18 (original) The decoder system of Claim 16, wherein said second decoder includes a gain-scaled random noise generator and the output applied to an LPC synthesis filter.

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Claim 19 (original) The decoder system of Claim 16, wherein said second decoder includes a codebook with allowable excitation vectors, a multiplier and an LPC filter.

Claim 20 (original) The decoder system of Claim 16, wherein said second decoder includes a multipulse waveform that is gain-scaled and filtered by an LPC synthesis filter.